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Ms. Magalie R. Salas
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Office of the Secretary
Federal Communications Commission
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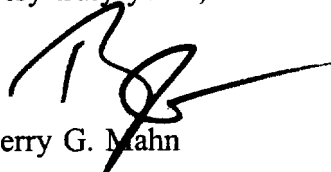
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Re: 1998 Biennial Regulatory Review -- Amendment of Part 18 of the
Commission's Rules to Update Regulations for RF Lighting Devices (ET
Docket No. 98-42)

Dear Ms. Salas:

Enclosed please find an original and four (4) copies of Comments submitted on
behalf of **Fusion Lighting** in the above-captioned proceeding. If you have any
questions or concerns regarding this filing please contact me directly.

Very truly yours,


Terry G. Mahn

DXM
Enclosures
cc: Wayne Love, Fusion Lighting

Our File: 03133/008001

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Before the
FEDERAL COMMUNICATIONS COMMISSION
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FEDERAL COMMUNICATIONS COMMISSION
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In the Matter of)

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1998 Biennial Regulatory Review --)
Amendment of Part 18 of the)
Commission's Rules to Update)
Regulations for RF Lighting Devices)
)
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ET Docket No. 98-42

COMMENTS OF
FUSION LIGHTING

Terry G. Mahn, Esq.
FISH & RICHARDSON P.C.
601 13th Street, N.W.
Washington, DC 20005

Counsel for Fusion Lighting

Dated: July 7, 1998

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of)
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1998 Biennial Regulatory Review --)
Amendment of Part 18 of the) ET Docket No. 98-42
Commission's Rules to Update)
Regulations for RF Lighting Devices)
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To: The Commission

COMMENTS OF
FUSION LIGHTING

Fusion Lighting (Fusion), by its counsel, hereby submits these comments in response to the Commission's Notice of Proposed Rulemaking, FCC 98-53 (released April 9, 1998) (NPRM). Fusion is a developer of a revolutionary microwave lighting technology which uses a 2.45 GHz magnetron power source to generate visible light in much the same way that a microwave oven uses a magnetron to cook food. This light source is intended for industrial-type lighting. It was Fusion's waiver petition, filed with the Commission on May 31, 1996,^{1/} that first raised the issues under discussion in this NPRM of the appropriate conducted limits and radiated limits above 1000 MHz for RF lighting devices. Fusion,

^{1/} Fusion withdrew its petition in May 28, 1997, based on its understanding that a rule making proceeding would be initiated by the Commission to propose permanent rule changes for RF lighting emissions.

therefore, has a significant stake in the outcome of this proceeding.

INTRODUCTION AND SUMMARY OF COMMENTS

Traditionally, RF lighting devices have been regulated in the U.S. as ISM, subject to the limits and measurement procedures in the Commission's Part 18 rules. Early versions of RF lighting, circa 1980, involved low frequency emitters whose radio interference characteristics were thought to be similar to those exhibited by information technology equipment (ITE). Accordingly, the Commission adopted conducted and radiated emissions limits for RF lighting that were identical to the limits established for digital devices set forth in the Part 15 rules. Whether this regulatory policy makes sense in the context of microwave RF lighting, whose interference characteristics are nearly identical to traditional ISM devices, such as microwave ovens, is the core issue raised by this proceeding.

Currently, it is the view of the international regulatory community that microwave lighting should be treated as ISM and not ITE, and this should be the view of the U.S. as well.^{2/} Consistent with this view, Fusion strongly believes that

^{2/} Under IEC/CISPR standards, low frequency lighting devices are governed by CISPR Publication 15. Microwave lighting, however, is not dealt with in Publication 15. Pending before IEC/CISPR is a proposal to regulate microwave lighting as ISM under Publication 11. See CISPR/B/192/CDV. This proposal has broad support throughout the international community and is expected to be adopted by the end of this year.

conducted limits for microwave RF lighting must be based on the unique technical characteristics of these devices and not on digital device rules that have little in common with ISM. For emission limits above 1000 MHz, Fusion urges the Commission to follow the lead of IEC/CISPR and harmonize U.S. standards with those currently under development by the international regulatory community. On the question of potential interference to mobile satellite services in the 2.45 GHz band, there should be no deviation from the long-standing regulatory principal that limits cannot be placed on any ISM device(s) operating in-band without doing significant harm to the historic goals that underlie these international allocations.

I. Conducted Limits For RF Lighting Must Take into Account the Unique EMC Characteristics of These ISM Devices.

On May 31, 1996, Fusion requested a waiver of the Part 18 conducted emission limits for its Solar 1000 RF lighting devices. Fusion pointed out that the limits applicable to the Solar 1000 were modeled on nascent low frequency lighting products whose emissions profiles were akin to those from digital devices. Such limits, Fusion contended, were inappropriate for RF lighting devices designed to use microwave frequencies in ISM bands. For these devices the Commission's Part 18 rules prescribed no limits below 30 MHz.

Fusion recounted the difficulty it faced trying to locate and procure commercially available RF filters that were UL listed

for safety at the high temperatures generated by the Solar 1000's magnetron power supply. Ultimately, Fusion determined that custom filters would have to be developed for the Solar 1000 at an added cost to end users of approximately 13% to 17% of the purchase price of the power supply.^{3/} Fusion questioned the need for such costly filtering given that millions of microwave ovens, along with other ISM devices using the same magnetron technology, produced virtually no reported cases of harmful interference in these low frequency (conducted) bands.

Because most spectrum users impacted by a waiver of the conducted limits would be federal agencies, Fusion presented its case to the National Telecommunications and Information Administration (NTIA), the spectrum coordinator for the federal government. Fusion thereupon modified its waiver request to accommodate the potential interference concerns of the governmental users. On December 31, 1996, Fusion amended its petition, asking the Commission to permit the Solar 1000 to operate at the following conducted emission limits:

- ▶ 100 dBuV below 450 kHz;
- ▶ 95 dBuV between 450 kHz and 5 MHz; and
- ▶ 95 dBuV decreasing linearly to 70 dBuV, above 5 MHz.

On February 12, 1997, NTIA submitted comments to the Commission supporting Fusion's modified waiver request. Subsequently,

^{3/} See Fusion Petition for Waiver (filed May 31, 1996) and follow-up letter of December 31, 1996.

Fusion withdrew its waiver petition when it learned from the Commission staff that this rule making proceeding would be initiated to propose permanent changes for RF lighting devices.

After carefully reviewing the NPRM, Fusion was shocked and disappointed to learn that the Commission believes a mere 10 dB relaxation above the Part 18 non-consumer RF lighting limits is adequate or fair to accommodate its lighting technology. As Fusion's waiver made clear, the Solar 1000 is more than four times as efficient as incandescent lighting, has none of the drawbacks of high intensity discharge (HID), and has been hailed by the Department of Energy as one of the most exciting breakthroughs in commercial lighting in the past 100 years. Thus, it is difficult for Fusion to understand what benefits the Commission hopes to achieve by burdening the Solar 1000 with limits that do not apply to domestic microwave ovens, currently numbering in the tens of millions, or to any other ISM devices.^{4/}

A stated reason for treating RF lighting differently than microwave ovens involves "sampling data" taken by the Commission which indicates that ovens are "up to 10 dB" above the non-consumer limits for RF lighting. NPRM at ¶ 11. Such sampling, however, measured only domestic ovens and did not include commercial or industrial ovens which are known to

^{4/} Even more disturbing is the fact that the Commission is insisting on tight conducted limits for RF lighting even while it is examining the possibility of abandoning conducted limits for all RF devices. See Notice of Inquiry, ET Docket No. 98-80, FCC 98-102 (released June 8, 1998).

generate much higher emissions levels than domestic sources. As Fusion pointed out in its waiver request, it is these commercial and industrial ovens, operating continuously in restaurants, fast food outlets and food processing centers throughout the country, that will share the same environment and emit the same RF interference pattern as the Solar 1000.^{5/}

The Commission provides no sound technical or regulatory basis for setting commercial RF lighting limits at levels measured from a handful of "sampled" domestic ovens. Such limits unfairly discriminate against commercial RF lighting. Fusion, therefore, urges the Commission to accept the limits developed and agreed to by Fusion and NTIA last year. For consumer RF lighting, the limits should be a "conventional" 10 dB tighter across the board.^{6/}

II. Radiated Emission Limits Above 1000 MHz for ISM Devices Should be Harmonized with IEC/CISPR.

As stated, Fusion can fathom no regulatory justification for treating microwave ISM lighting devices like ITE. Yet, the Commission proposes to adopt radiated emission limits above 1000 MHz that are based on those established for ITE.

^{5/} Even the international CISPR 11 limits for commercial microwave ovens are more lenient than what is being proposed for RF lighting.

^{6/} To the extent that GE may be requesting higher limits in the bands in which its devices operate, Fusion supports GE's request.

Were the Commission proposing to treat all ISM devices in the same manner, there would at least be an element of symmetry in its proposal; but that is not the case. Instead, the Commission is prepared to overlook the numerous technical, operational and EMC similarities between ISM devices and RF lighting devices to recommend that these latter products be treated like ITE -- RF emitters which have virtually nothing in common. Fusion strongly disagrees with this asymmetric and groundless approach to Commission regulatory policy.

At a minimum, Fusion urges that the 250 uV/m limit for emissions above 1000 MHz applicable to non-consumer microwave ovens also be applied to RF lighting devices. For consumer RF lighting, the Commission should harmonize its standards with the proposed Class B/Group 2 CISPR 11 limits currently in their final stages of approval by IEC/CISPR.^{2/} These limits, developed by international consensus after more than 3 years of study, are based on the same interference concerns to digital audio radio and mobile satellite services raised in this proceeding.^{3/}

The CISPR 11 proposal sets limits (consumer devices only) above 1000 MHz based on two types of RF sources: continuous and fluctuating emitters. If an ISM device can meet a limit of 70 dBuV/m, measured in peak at 3 meters, it will be in compliance with the CISPR 11 standard. If not, the device will be allowed

^{2/} See CISPR/B/204/CDV, attached in Appendix I.

^{3/} Digital audio radio and mobile satellite services are allocated internationally by the ITU, thus the threat to interference from these services are of worldwide concern and not unique to the U.S.

to meet a higher peak limit^{9/} provided it also meets an average limit of 60 dBuV/m, measured at 3 meters. Transposing these limits to field strength readings at 30 meters to correspond to the Commission's rules yields the following two-stage test for consumer RF lighting:

- (1) 316 uV/m peak, or
- (2) 447 uV/m to 3160 uV/m peak^{10/} and 100 uV/m average.^{11/}

^{9/} Peak limits as follows:

Frequency range (GHz)	Field strength at a measurement distance of 3 meters (dB(uV/m))
1 - 2.3	92
2.3 - 2.4	110
2.5 - 5.725	92
5.825 - 11.7	92
11.7 - 12.7	73
12.7 - 18	92
Note: Limits of this table were derived considering fluctuating sources like magnetron driven microwave ovens.	

^{10/} Plus average measurements as follows:

Frequency range (GHz)	Field strength at a measurement distance of 3 meters (dB(uV/m); VBW = 10Hz)
1 - 2.4	60
2.5 - 5.725	60
5.825 - 18	60
To check the limits of this table, measurements need only to be performed around two center frequencies: the highest peak emission in the 1005 MHz - 2395 MHz band and the highest peak emission in the 2505 - 17995 MHz band (outside the band 5720 - 5830 MHz). At these two center frequencies, measurements are performed with a span of 10 MHz on the spectrum analyzer.	

^{11/} "Average measurements" proposed by CISPR require the spectrum analyzer to be set on log average rather than linear average as required by Commission procedures. Also, CISPR average

Inasmuch as the difference among the Commission's proposed alternative limits -- 50 uV/m (digital devices) or 250 uV/m (microwave ovens) -- and the CISPR 11 proposal is on the order of only a few dB, Fusion believes that the deciding factor should weigh in favor of international harmonization. Manufacturers will benefit from harmonized standards by having common rules against which to design and measure their products, and consumers will benefit from the scale economies and lower costs achieved when products do not have to be customized to accommodate multiple or inconsistent standards regimes.

Additionally, as the Commission moves forward with plans to implement its Mutual Recognition Agreement with the European Union,^{12/} international standards harmonization will help to lower the cost and reduce the time it takes for all manufacturers to test and certify devices for worldwide distribution. Thus, the Commission is urged not to develop a custom regulatory scheme for ISM lighting, but rather to rely on standards already in place or on the "drawing board" at the international level. For commercial RF lighting device emissions above 1000 MHz, the Commission should use the current Part 18 limits that apply to microwave ovens; for consumer RF lighting, the proposed IEC/CISPR 11 limits, as described above, should be adopted.

measurements would only have to be made at two center frequencies for a fluctuating device rather than throughout the spectrum as required by the Commission (See Appendix I).

^{12/} Notice of Proposed Rulemaking, Gen Docket 98-68 (released May 18, 1998).

III. In-Band Limits Must Not be Adopted for RF Lighting or any Other ISM Technology.

Despite concluding that mobile satellite service (MSS) operations "should not be adversely affected by ISM operations", the Commission invites comment on whether in-band limits for ISM RF lighting technology may be necessary to facilitate band "sharing". NPRM, ¶ 13. In this regard, the Commission implies that limits may be warranted based on the "proliferate" and "outdoor" nature of RF lighting technology that was not considered in assessing the ISM interference potential in the original MSS Docket (CC Docket No. 92-166). Fusion strongly objects to any notion of adopting in-band limits for RF lighting (or any other ISM device) for both technical and historic reasons.

A. MSS Expressly Accepted a Spectrum Allocation Subject to ISM Interference.

Although the record in the MSS Docket notes that MSS has spectrum rights that are co-equal to ISM^{13/}, the Commission correctly observes, and footnote 752 of the Commission's Table of Allocations also makes clear, that non-ISM services like MSS must

^{13/} The Commission allocated the 2483.5-2500 MHz band for MSS use on a co-primary basis in 1994, in accordance with decisions made at the 1992 World Administrative Radio Conference (WARC-92). See In the Matter of Amendment of Section 2.106 of the Commission's Rules to Allocate the 1610-1626.5 MHz and the 2483.5-2500 MHz Bands for Use by the Mobile Satellite Service, Including Non-geostationary Satellites, Report and Order, ET Docket No. 93-28, 9 FCC Rcd 536 (1994).

accept harmful interference from ISM devices which operate in the 2400-2500 MHz ISM band. NPRM, at 6 n.15. For this reason, the MSS Docket was essentially limited to establishing licensing and technical regulations to maximize operability of MSS within the allocated spectrum, rather than protecting MSS users from ISM interference.^{14/}

The fundamental MSS/ISM "sharing" situation was well known to MSS proponents, including Loral/Qualcomm Partnership, L.P. (LQP), which even noted that "International Footnote 752 requires MSS systems to accept interference from ISM devices, so 'sharing' is not at issue."^{15/} In addition, technical studies were submitted by MSS proponents in an effort to convince the Commission that MSS downlinks could effectively operate in the 2483.5-2500 band despite potential interference from millions of installed ISM devices.^{16/} Thus, there can be no question that MSS proponents took their allocation subject to the uncertainty of ISM usage in-band.

^{14/} See FCC Asks for Comments Regarding the Establishment of an Advisory Committee to Negotiate Proposed Regulations, Public Notice, DA 92-1085, 7 FCC Rcd 5241 (1992), at ¶ 5. See also Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, Notice of Proposed Rulemaking, CC Docket No. 92-166, 9 FCC Rcd 1094 (1994), at ¶ 10.

^{15/} See Comments of Loral/Qualcomm Partnership, L.P., CC Docket No. 92-166 (filed May 5, 1994), 35 n.25.

^{16/} See, e.g., Technical Appendix to Comments of Loral/Qualcomm Partnership, L.P., CC Docket No. 92-166 (filed May 5, 1994).

B. Magnetron-Based Lighting Technology Does Not Present a Threat of Harmful Interference to MSS.

The Commission suggests that RF lighting technology may pose an unanticipated source of potential interference to MSS, implying that RF lighting devices operate fundamentally differently than microwave ovens. NPRM, ¶ 13. As Fusion has noted, however, its RF lighting technology was developed with the same type power source -- the 2.45 GHz magnetron -- used in microwave ovens, producing an emissions profile that is similar, only more stable because lighting devices do not experience variable loading which occurs during cooking.^{17/} In addition, it has been noted that like RF lighting, many microwave ovens operate continuously in commercial and industrial food service establishments.

In the MSS docket, LQP submitted technical data based on field testing in the San Francisco Bay Area, from which it concluded that MSS operation even in "densely populated residential, industrial and commercial regions in California" would be "relatively interference-free."^{18/19/} LQP noted that even if interference were to be encountered, MSS systems have the capability to move the user to one of several downlink channels,

^{17/} Like microwave ovens, the magnetron power source in an RF lighting device exhibits a frequency profile that predominantly occupies lower portions of the 2.45 GHz band, below the region where an MSS downlink will operate.

^{18/} LQP Comments at 82.

^{19/} TRW also made a study of ISM interference which apparently confirmed LQP's conclusions. See Reply Comments of TRW, CC Docket No. 92-166, at 86.

or switch to terrestrial services likely to be available in urban areas where ISM interference is most prevalent.^{20/} LQP further noted that even if the Commission were to adopt lower radiated limits for microwave ovens, this would not reduce the interference to which MSS would be exposed, given the millions of microwave ovens now operating in the U.S. and throughout the world.^{21/}

C. Adoption of In-Band Limits Would Undermine ISM Technology and Reverse 50 Years of FCC Policy Toward ISM.

The principal that ISM products must be allowed to operate within ISM bands unhampered by emission limits is a cornerstone in the regulation of ISM technology. The clear and unfettered spectrum rights enjoyed by ISM, codified in the Commission's Rules since their adoption in 1946, has never been a matter of convenience but has been one of necessity. As the Commission is well aware, the ISM bands were allocated for the important societal purpose of promoting certain vital industrial, scientific and medical technologies that require high levels of RF to serve their intended function. Any governmental policy

^{20/} See LQP Comments at 82.

^{21/} See Technical Appendix to Reply Comments of Loral/Qualcomm Partnership, L.P., CC Docket No. 92-166 (filed June 20, 1994), at 33. Outdoor lighting, like microwave ovens fits the ISM interference model developed by LQP of "ground-level-to-ground-level propagation with significant impairments from obstructions caused by buildings and trees." Technical Appendix to LQP Comments, at 28.

which tends to limit or discourage ISM usage in these bands not only diminishes the importance of these technologies, but encourages the development and use of ISM products outside the allocated bands where radio interference is less tolerable.^{22/} As the Commission readily acknowledges, these high power devices are "specifically designed to operate in the ISM bands due to their incompatibility with lower power communication systems." NPRM, ¶ 13.

More significantly perhaps, the adoption of an in-band limit for RF lighting would represent the first instance in Commission history where an in-band limit is placed on any ISM device. Because such unprecedented action would "blind-side" manufacturers like Fusion and undermine the regulatory foundation upon which the ISM industry is based, it can only be considered seriously in a proceeding that is beyond the scope of this NPRM. Even the suggestion that in-band limits are under consideration is damaging as it sends the wrong signal to communications users that ISM bands may be available for new services, threatening the

^{22/} The ITU, for example, studied the feasibility of establishing ISM limits in-band, but rejected such notion outright because such limits would "decrease the usefulness of ISM bands ... and encourage the use of ISM equipment in frequency ranges more suitable for their purposes but detrimental to radio services." Draft new Recommendation [Doc. 1/64-E], Limitation of Radiation From Industrial, Scientific and Medical (ISM) Equipment, Task Group 1/2, International Telecommunications Union, Radiocommunications Study Group (11 November, 1993), at ¶ 3.1; adopted under Chairman's Report on the Final Meeting of Task Group 1-2 (Paris, 16-17 September 1993), ITU Document 1/65-E (14 December 1993).


50-year balance that currently exists between ISM and those few in-band communications users which operate on a sufferance basis.

CONCLUSION

Based on the foregoing comments, Fusion urges the Commission to adopt new RF lighting standards as follows:

- (1) for conducted emissions, the non-consumer limits set forth above as agreed to by NTIA, and consumer limits set 10 dB above those;
- (2) for radiated limits above 1000 MHz, the non-consumer limits currently applicable to microwave ovens (250 uV/m), and consumer limits the same as those under development by IEC/CISPR also set forth above; and
- (3) no in-band limits for any RF lighting devices.

Respectfully submitted



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Counsel for Fusion Lighting

July 7, 1998

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APPENDIX I



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

MAILED 5/15/98

L. Wall
D. Heirman
K. Nebbia

Bureau Central / Central Office

BORDEREAU D'ENVOI DE DOCUMENTS

COMITE D'ETUDES
TECHNICAL COMMITTEE CISPR

Veuillez trouver ci-inclus le nombre requis
d'exemplaires des documents suivants:

DOCUMENT DISPATCH ADVICE NOTE

SOUS-COMITE
SUB-COMMITTEE CIS/B 1998-03-20

Please find enclosed the requisite number
of copies of the following documents:

CIS/B/204/CDV

Amendment 1 to CISPR 11: Emission limits from 1 GHz to 18 GHz

Amendement 1 à la CISPR 11: Limites d'émission de 1 GHz à 18 GHz

Les Comités nationaux sont priés
d'envoyer leurs OBSERVATIONS et leur
VOTE de sorte qu'ils parviennent au
Bureau Central

National Committees are requested to
send their COMMENTS and VOTE in order
to reach the Central Office

AU PLUS TARD LE 31 AOÛT 1998,
avec copie au Secrétaire du SC CIS/B.

NOT LATER THAN 31st AUGUST 1998,
with copy to the Secretary of SC CIS/B

cc.: Mr. M.C. Vrolijk, Chairman CISPR/SC B
Mr. M. Okamura, Secretary CISPR/SC B
Dr. W.A. Radasky, Chairman ACEC
CISPR Steering Committee
CEPT, UIC: 5 ex.



Project number CISPR 11 Am. 1 f2 Ed. 3	
Date of circulation 1998-03-20	Closing date for voting 1998-08-31
IEC/TC or SC: CISPR/B Title: Interference relating to industrial, scientific and medical radio-frequency apparatus	Secretary (name and address): Mr. Masuo OKAMURA Secretary IEC/CISPR/B Director EMC Engineering Lab. Japan Quality Assurance Organization 21-26 Kinuta 1-Chome, Setagaya-ku JP - TOKYO 157 Japan
Title of the committee draft: Amendment 1 to CISPR 11: Emission limits from 1 GHz to 18 GHz	

Please send this form, duly completed, to the Central Office, with copy to the secretary indicated above. P-members of the technical committee or subcommittee concerned have an obligation to vote.

- ☐ We agree to the circulation of the draft as an FDIS in accordance with 2.7.1 of part 1 of the ISO/IEC Directives (or publication in the case of a draft Technical Report).
- ☐ with comments (editorial or other appended)
- ☐ We do not agree to the circulation of the draft as an FDIS (or publication in the case of a draft Technical Report).
The reasons for our disagreement are the following (use a separate page as annex, if necessary):

Vote and Comments
to USNC/IEC Office
by 1998-08-15

☐ We abstain

National Committee voting:	Name:
	Date:
	Signature:

COMMITTEE DRAFT FOR VOTE (CD)
PROJET DE COMITÉ POUR VOTE (CD)

Project number Numéro de projet CISPR 11 Am. 1 f2 Ed. 3		
IEC/TC or SC: CISPR/B CEI/CE ou SC:	Date of circulation Date de diffusion 1998-03-20	Closing date for voting (Voting mandatory for P-members) Date de clôture du vote (Vote obligatoire pour les membres (P)) 1998-08-31
Title: Perturbations relatives aux appareils industriels, scientifiques et médicaux à fréquences radioélectriques		Title: Interference relating to industrial, scientific and medical radio-frequency apparatus
Secretary: Mr. Masuo OKAMURA Secrétaire:		
Also of interest to the following committees Intéresse également les comités suivants		Supersedes document Remplace le document CISPR/B/175/CD
Horizontal functions concerned Fonctions horizontales concernées		
<input type="checkbox"/> Safety Sécurité	<input checked="" type="checkbox"/> EMC CEM	<input type="checkbox"/> Environment Environnement
<input type="checkbox"/> Quality assurance Assurance qualité		

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THIS DOCUMENT IS STILL UNDER STUDY AND SUBJECT TO CHANGE
SHOULD NOT BE USED FOR REFERENCE PURPOSES

RECIPIENTS OF THIS DOCUMENT ARE INVITED TO SUBMIT, WITH THE COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION

Titre : Amendement 1 à la CISPR 11: Limites
d'émission de 1 GHz à 18 GHzTitle : Amendment 1 to CISPR 11: Emission limits
from 1 GHz to 18 GHz

Note d'introduction

Ce projet de comité pour vote est basé sur les observations des comités nationaux sur le document CISPR/B/175/CD qui sont contenus dans le document CISPR/B/197/CC qui a été discuté aux réunions du CISPR/B et du CISPR/B/WG 1 à Yokosuka, Japon en novembre 1997.

Introductory note

This Committee Draft for Voting is based on the National Committee's comments on CISPR/B/175/CD contained in the document CISPR/B/197/CC that have been discussed at the CISPR/B and CISPR/B/WG1 meetings held in Yokosuka, Japan, in November 1997.

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

COMITE INTERNATIONAL SPECIAL DES PERTURBATIONS RADIOELECTRIQUES (CISPR)

SOUS-COMITE B : PERTURBATIONS PRODUITES PAR LES APPAREILS INDUSTRIELS
SCIENTIFIQUES ET MEDICAUX (ISM) A FREQUENCES RADIOELECTRIQUES

PROPOSITION DE LIMITES D'EMISSION ENTRE 1 ET 18 GHz

Proposition d'amendement à la CISPR 11

Article 5 : Valeurs limites des perturbations électromagnétiques

Article 6 : Exigences générales pour les mesures

Article 8 : Mesures de rayonnement entre 1 GHz et 18 GHz

Article 11 : Evaluation de la conformité des appareils

Ce Projet de Comité pour Vote est basé sur les commentaires des comités nationaux sur le document CISPR/B/175/CD qui sont contenus dans le document CISPR/B/197/CC qui a été discuté aux réunions du CISPR/B et du CISPR/B/WG1 à Yokosuka, Japon en Novembre 1997.

Il convient de noter que les trois notes explicatives concernant le CISPR/A indiquées aux articles 6.2.1, 6.2.4 et 8.4 de ce présent amendement seront supprimées lorsque le document du CISPR/A concerné aura été publié

Article 5.2.3 "Bande de fréquences comprise entre 1 GHz et 18 GHz".

Remplacer tout le texte par le suivant :

Appareils ISM du groupe 1 :

Les limites sont à l'étude.

Note : Il est prévu que les limites de perturbations pour les appareils ISM du groupe 1 soient identiques aux limites actuellement à l'étude au CISPR/G pour les Appareils de Traitement de l'Information (ATI) au-dessus de 1 GHz.

Appareils ISM du groupe 2 :

Appareils de Classe : Les limites sont à l'étude.

Appareils de Classe B: Appareils ISM fonctionnant à des fréquences inférieures à 400 MHz
Les limites sont à l'étude.

Note : Lorsqu'elles auront été finalisées, ces limites seront introduites accompagnées de la présente clause d'essai conditionnel : si, dans la bande de 500 MHz à 1 GHz, toutes les émissions sont inférieures aux limites de classe B et la cinquième harmonique de la plus haute source interne n'excède pas 1 GHz (c'est à dire, plus haute source < 200 MHz), aucun essai au-dessus de 1 GHz n'est requis.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE (CISPR)

SUB-COMMITTEE B : INTERFERENCE FROM INDUSTRIAL SCIENTIFIC AND MEDICAL (ISM)
RADIO FREQUENCY APPARATUS

PROPOSAL FOR EMISSION LIMITS FROM 1 TO 18 GHz

Proposed amendment to CISPR 11

Clause 5 : Limits of electromagnetic disturbances

Clause 6 : General measurement requirements

Clause 8 : Radiation measurements : 1 GHz to 18 GHz

Clause 11 : Assessment of conformity of equipment

This Committee Draft for Voting is based on the National Committee comments on CISPR/B/175/CD contained in document CISPR/B/197/CC that have been discussed at the CISPR/B and CISPR/B/WG1 meetings in Yokosuka, Japan in November 1997.

Please note that the three explanatory notes referring to the CISPR/A activities mentioned in clauses 6.2.1, 6.2.4 and 8.4 of the proposed amendment will be removed when the subsequent CISPR/A documents will have been published.

Sub-clause 5.2.3 "Frequency band 1 GHz to 18 GHz".

Replace the whole text by the following :

Group 1 ISM equipment :

Limits are under consideration.

Note : Radiated disturbance limits for group 1 ISM equipment are intended to be identical to the limits currently under consideration by CISPR/G for Information Technology Equipment (ITE) above 1 GHz.

Group 2 ISM equipment :

Class A equipment : Limits are under consideration.

Class B equipment : ISM equipment operating at frequencies below 400 MHz : Limits are under consideration.

Note : When finalised, these limits will be introduced together with the following conditional testing clause : if, in the band from 500 MHz to 1 GHz, all emissions are below the Class B limits and the 5th harmonic of the highest internally generated source is lower than 1 GHz (i.e. higher source < 200 MHz), no testing above 1 GHz is required

Appareils ISM fonctionnant à des fréquences supérieures à 400 MHz

Les limites de perturbations électromagnétiques entre 1 GHz et 18 GHz sont spécifiées aux tableaux 6 à 8 : l'appareil ISM doit respecter soit les limites du tableau 6, soit à la fois les limites du tableau 7 et du tableau 8 (voir l'arbre de décision).

Des dispositions particulières concernant la protection des services de sécurité sont données à l'article 5.3 et au tableau 9 (numéroté tableau 6 dans la Publication 11 actuelle).

Arbre de décision pour la mesure des émissions entre 1 et 18 GHz des appareils ISM du groupe 2 classe B fonctionnant à des fréquences supérieures à 400 MHz

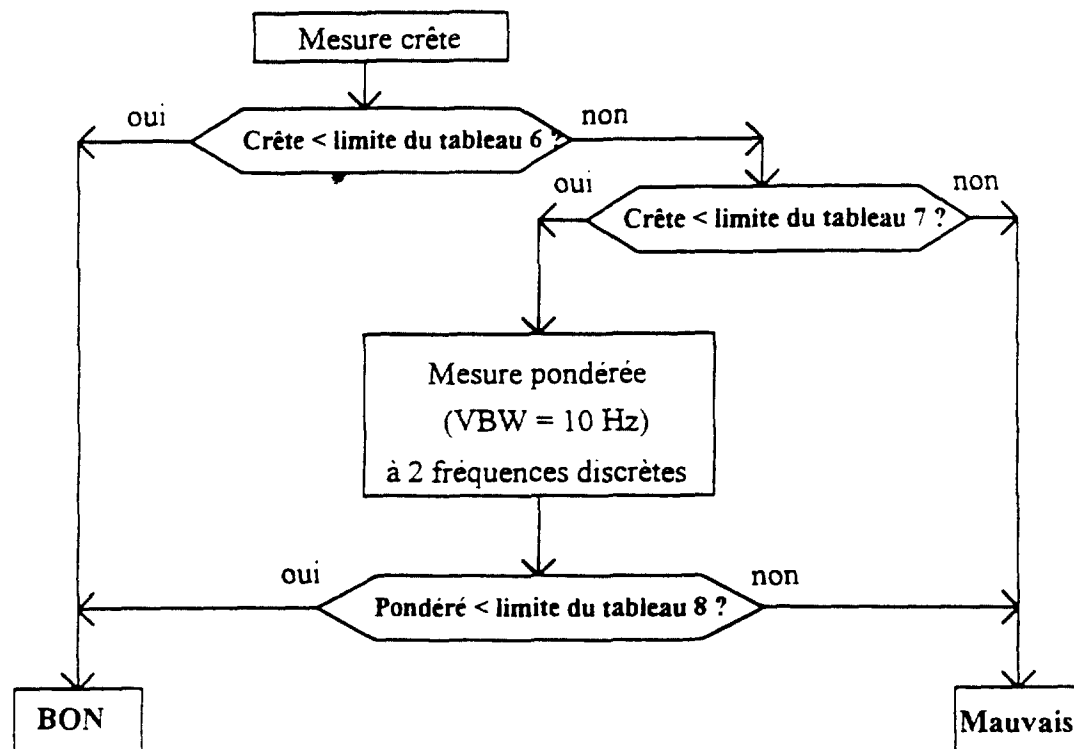


Tableau 6 - Limites en valeur crête du rayonnement électromagnétique perturbateur des appareils ISM du groupe 2 classe B produisant des perturbations de type continu et fonctionnant à des fréquences supérieures à 400 MHz (mesure crête avec une bande de résolution de 1 MHz et une bande vidéo supérieure ou égale à 1 MHz)

Bande de fréquences (GHz)	Champ électrique à une distance de mesure de 3 mètres (dB(μV/m))
1 - 2,4	70
2,5 - 5,725	70
5,875 - 18	70
<i>Note</i> Pour la protection des services radioélectriques, les autorités nationales compétentes peuvent imposer des limites inférieures	

ISM equipment operating at frequencies above 400 MHz

The electromagnetic radiation disturbance limits for the frequency range 1 GHz to 18 GHz are specified in Tables 6 to 8 : the ISM equipment shall meet either Table 6 limits or both Table 7 and Table 8 limits (see decision tree).

Special provisions for the protection of specific safety services are given in 5.3 and Table 9 (numbered Table 6 in existing Publication 11).

Decision tree for the measurement of emission from 1 to 18 GHz of Class B Group 2 ISM equipment operating at frequencies above 400 MHz

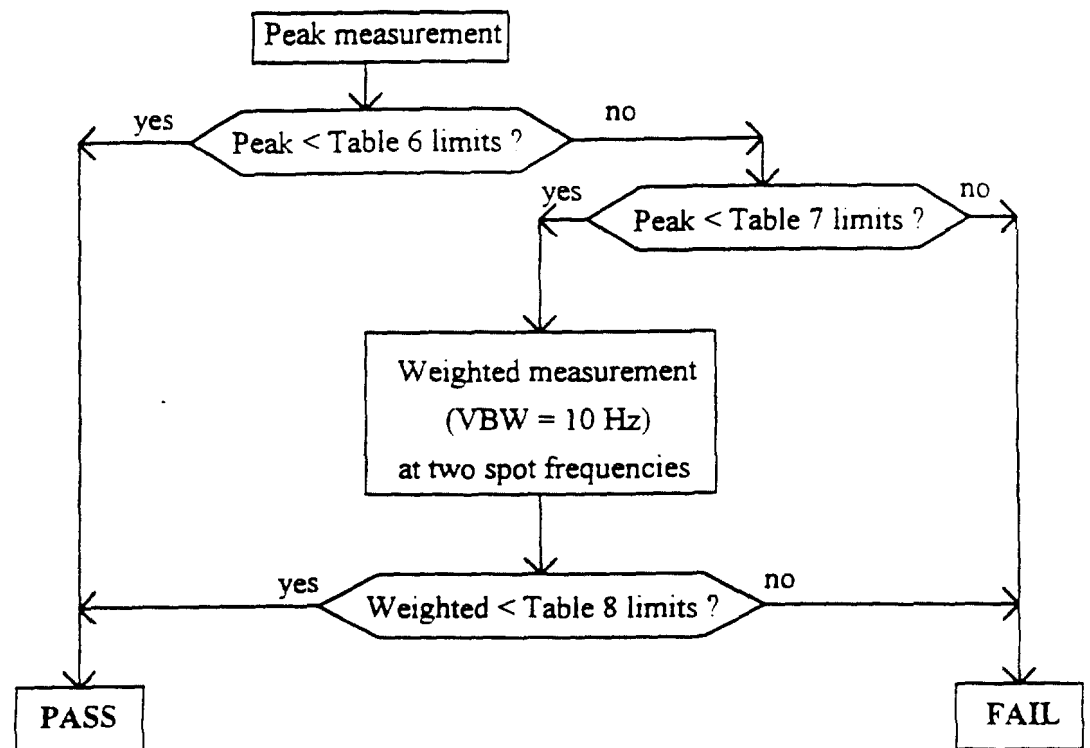


Table 6 - Electromagnetic radiation disturbance peak limits for Group 2 Class B ISM equipment producing CW type disturbances and operating at frequencies above 400 MHz (peak measurements with a resolution bandwidth of 1 MHz and a video bandwidth higher or equal to 1 MHz)

Frequency range (GHz)	Field strength at a measurement distance of 3 metres (dB(μV/m))
1 - 2.4	70
2.5 - 5.725	70
5.875 - 18	70
Note : For the protection of radio services, competent national authorities may require lower limits.	